

Application No. 10/518,886
Docket No. 2002B096/2
Reply to OA of September 19, 2006
Amendment dated December 18, 2006

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IN THE CLAIMS:

Please amend the claims as follows:

1. (Currently amended) A composition suitable for an air barrier ~~comprising~~ consisting essentially of:
 - an elastomer comprising C₄ to C₇ isoolefin derived units;
 - a processing oil; and
 - a plastomer, wherein the plastomer is a copolymer of ethylene derived units and C₃ to C₁₀ α -olefin derived units and has a density of less than 0.915 g/cm³,
wherein the composition has a brittleness value of less than -41.0°C; and
wherein the composition comprises no more than 0.2 wt% of paraffinic, naphthenic and aromatic oils.
2. (Original) The composition of Claim 1, wherein the plastomer comprises ethylene derived units and from 10 wt% to 30 wt% of C₃ to C₁₀ α -olefin derived units.
3. (Original) The composition of Claim 1, wherein the plastomer comprises ethylene derived units and from 10 wt% to 30 wt% of units selected from 1-butene, 1-hexene and 1-octene derived units.
4. (Original) The composition of Claim 1, wherein the plastomer comprises ethylene derived units and from 10 wt% to 30 wt% of octene derived units.
5. (Previously presented) The composition of Claim 1, wherein the plastomer has a melt index of from 0.1 to 10 dg/min as measured by ASTM D 1238 at 190°C and 2.1 kg.
6. (Original) The composition of Claim 1, wherein the plastomer is present in the composition from 2 to 20 phr.

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7. (Original) The composition of Claim 1, wherein the plastomer is present in the composition from 10 to 15 phr.
8. (Canceled)
9. (Currently amended) The composition of Claim 1, wherein the processing oil is selected from ~~paraffinic oils, polybutene processing oils, and mixtures thereof.~~
10. (Previously presented) The composition of Claim 1, wherein the processing oil is present from 2 to 20 phr.
11. (Original) The composition of Claim 1, also comprising a filler selected from carbon black, modified carbon black, silicates, clay, exfoliated clay, and mixtures thereof.
12. (Currently amended) The composition of Claim 1, further ~~comprising~~ consisting essentially of one or more components selected from natural rubbers, polyisoprene rubber, styrene-butadiene rubber (SBR), polybutadiene rubber, isoprene-butadiene rubber (IBR), styrene-isoprene-butadiene rubber (SIBR), ethylene-propylene rubber, ethylene-propylene-diene rubber (EPDM), polysulfide, nitrile rubber, propylene oxide polymers, ~~poly(isobutylene-co-p-methylstyrene), halogenated poly(isobutylene-co-p-methylstyrene), poly(isobutylene-co-cyclopentadiene), halogenated poly(isobutylene-co-cyclopentadiene),~~ and mixtures thereof.
13. (Currently amended) The composition of Claim 1, further comprising from 5 to 30 phr of one or more components selected from natural rubbers, polyisoprene rubber, styrene-butadiene rubber (SBR), polybutadiene rubber, isoprene-butadiene rubber (IBR), styrene-isoprene-butadiene rubber (SIBR), ethylene-propylene rubber, ethylene-propylene-diene rubber (EPDM), polysulfide, nitrile rubber, propylene oxide polymers, ~~poly(isobutylene-co-p-methylstyrene), halogenated poly(isobutylene-co-p-methylstyrene), poly(isobutylene-co-cyclopentadiene), halogenated poly(isobutylene-co-cyclopentadiene),~~ and mixtures thereof.

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14. (Original) The composition of Claim 1, wherein the C₄ to C₇ isoolefin derived units are selected from isobutylene, isobutene, 2-methyl-1-butene, 3-methyl-1-butene, 2-methyl-2-butene, 1-butene, 2-butene, methyl vinyl ether, indene, vinyltrimethylsilane, hexene, and 4-methyl-1-pentene.
15. (Original) The composition of Claim 1, wherein the elastomer also comprises multiolefin derived units selected from isoprene, butadiene, 2,3-dimethyl-1,3-butadiene, myrcene, 6,6-dimethyl-fulvene, hexadiene, cyclopentadiene, and piperylene.
16. (Original) The composition of Claim 1, wherein the elastomer also comprises styrenic derived units selected from styrene, chlorostyrene, methoxystyrene, indene and indene derivatives, *α*-methylstyrene, *o*-methylstyrene, *m*-methylstyrene, and *p*-methylstyrene, and *p*-tert-butylstyrene.
17. (Original) The composition of Claim 1, wherein the elastomer is halogenated.
18. (Original) The composition of Claim 1, also comprising a curative selected from sulfur, sulfur-based compounds, metal oxides, metal oxide complexes, fatty acids, peroxides, diamines, and mixtures thereof.
19. (Canceled)
20. (Previously presented) The composition of Claim 1, wherein the composition has a Shore A Hardness at 25°C of less than 55.
21. (Previously presented) The composition of Claim 1, wherein the composition has an air permeability at 65°C of less than $3.50 \times 10^{-8} \text{ cm}^3\text{-cm/cm}^2\text{-sec-atm}$.
22. (Previously presented) The composition of Claim 1, wherein the composition has an Adhesion to Carcass value of greater than 4 N/mm.

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23. (Original) An article selected from tire curing bladders, innerliners, tire innertubes, and air sleeves made from the composition of Claim 1.
24. (Currently amended) A composition suitable for an air barrier ~~comprising~~ consisting essentially of:
polybutene processing oil;
an elastomer comprising C₄ to C₇ isoolefin derived units; and
a plastomer, wherein the plastomer is a copolymer of ethylene derived units and C₃ to C₁₀ α-olefin derived units and has a density of less than 0.915 g/cm³,
wherein the composition has a brittleness value of less than -41.0°C.
25. (Original) The composition of Claim 24, wherein the plastomer comprises ethylene derived units and from 10 wt% to 30 wt% of C₃ to C₁₀ α-olefin derived units.
26. (Original) The composition of Claim 24, wherein the plastomer comprises ethylene derived units and from 10 wt% to 30 wt% of units selected from 1-butene, 1-hexene and 1-octene derived units.
27. (Original) The composition of Claim 24, wherein the plastomer comprises ethylene derived units and from 10 wt% to 30 wt% of octene derived units.
28. (Previously presented) The composition of Claim 24, wherein the plastomer has a melt index of from 0.1 to 10 dg/min as measured by ASTM D 1238 at 190°C and 2.1 kg.
29. (Original) The composition of Claim 24, wherein the plastomer is present in the composition from 2 to 20 phr.
30. (Original) The composition of Claim 24, wherein the plastomer is present in the composition from 3 to 10 phr.

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31. (Original) The composition of Claim 24, wherein the polybutene processing oil has a number average molecular weight of from 900 to 8000.
32. (Original) The composition of Claim 24, wherein the polybutene processing oil is present from 2 to 20 phr.
33. (Currently amended) The composition of Claim 24, also ~~comprising~~ consisting essentially of a filler selected from carbon black, modified carbon black, silicates, clay, exfoliated clay, and mixtures thereof.
34. (Canceled)
35. (Currently amended) The composition of Claim 24, further ~~comprising~~ consisting essentially of one or more components selected from natural rubbers, polyisoprene rubber, styrene-butadiene rubber (SBR), polybutadiene rubber, isoprene-butadiene rubber (IBR), styrene-isoprene-butadiene rubber (SIBR), ethylene-propylene rubber, ethylene-propylene-diene rubber (EPDM), polysulfide, nitrile rubber, propylene oxide polymers, poly(isobutylene-co-p-methylstyrene), ~~halogenated poly(isobutylene-co-p-methylstyrene)~~, ~~poly(isobutylene-co-cyclopentadiene)~~, ~~halogenated poly(isobutylene-co-cyclopentadiene)~~, and mixtures thereof.
36. (Currently amended) The composition of Claim 24, further ~~comprising~~ consisting essentially of from 5 to 50 phr of one or more components selected from natural rubbers, polyisoprene rubber, styrene-butadiene rubber (SBR), polybutadiene rubber, isoprene-butadiene rubber (IBR), styrene-isoprene-butadiene rubber (SIBR), ethylene-propylene rubber, ethylene-propylene-diene rubber (EPDM), polysulfide, nitrile rubber, propylene oxide polymers, poly(isobutylene-co-p-methylstyrene), ~~halogenated poly(isobutylene-co-p-methylstyrene)~~, ~~poly(isobutylene-co-cyclopentadiene)~~, ~~halogenated poly(isobutylene-co-cyclopentadiene)~~, and mixtures thereof.
37. (Original) The composition of Claim 24, wherein the C₄ to C₇ isoolefin derived units are selected from isobutylene, isobutene, 2-methyl-1-butene, 3-methyl-1-butene, 2-methyl-2-butene,

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- 1-butene, 2-butene, methyl vinyl ether, indene, vinyltrimethylsilane, hexene, and 4-methyl-1-pentene.
38. (Original) The composition of Claim 24, wherein the elastomer also comprises multiolefin derived units selected from isoprene, butadiene, 2,3-dimethyl-1,3-butadiene, myrcene, 6,6-dimethyl-fulvene, hexadiene, cyclopentadiene, and piperylene.
39. (Original) The composition of Claim 24, wherein the elastomer also comprises styrenic derived units selected from styrene, chlorostyrene, methoxystyrene, indene and indene derivatives, *α*-methylstyrene, *o*-methylstyrene, *m*-methylstyrene, and *p*-methylstyrene, and *p*-tert-butylstyrene.
40. (Original) The composition of Claim 24, wherein the elastomer is halogenated.
41. (Currently amended) The composition of Claim 24, also ~~comprising~~ consisting essentially of a curative selected from sulfur, sulfur-based compounds, metal oxides, metal oxide complexes, fatty acids, peroxides, diamines, and mixtures thereof.
42. (Canceled)
43. (Previously presented) The composition of Claim 24, wherein the composition has a Shore A Hardness at 25°C of less than 50.
44. (Previously presented) The composition of Claim 24, wherein the composition has an aged Shore A Hardness at 25°C of less than 55.
45. (Previously presented) The composition of Claim 24, wherein the composition has an air permeability at 65°C of less than $3.50 \times 10^{-8} \text{ cm}^3\text{-cm/cm}^2\text{-sec-atm}$.
46. (Previously presented) The composition of Claim 24, wherein the composition has an Adhesion to Carcass value of greater than 4 N/mm.

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47. (Original) An article selected from tire curing bladders, innerliners, tire innertubes, and air sleeves made from the composition of Claim 24.
48. (Previously presented) A composition suitable for an air barrier comprising
from 5 to 25 phr polybutene processing oil;
halogenated star-branched butyl rubber;
from 5 to 25 phr natural rubber; and
from 5 to 25 phr of a plastomer, wherein the plastomer is a copolymer of ethylene
derived units and C₃ to C₁₀ α -olefin derived units and has a density of less than
0.915 g/cm³; and wherein the composition has a Brittleness value of less than -
41.0°C.
49. (Original) The composition of Claim 48, wherein the polybutene processing oil has a
number average molecular weight of from 900 to 3000.
50. (Original) An article selected from tire curing bladders, innerliners, tire innertubes, and air
sleeves made from the composition of Claim 48.
51. (New) The composition of Claim 1, wherein the elastomer is selected from poly(isobutylene-*co*-*p*-methylstyrene), halogenated poly(isobutylene-*co*-*p*-methylstyrene), poly(isobutylene-*co*-cyclopentadiene), halogenated poly(isobutylene-*co*-cyclopentadiene) and mixtures thereof.
52. (New) The composition of Claim 24, wherein the elastomer is selected from poly(isobutylene-*co*-*p*-methylstyrene), halogenated poly(isobutylene-*co*-*p*-methylstyrene), poly(isobutylene-*co*-cyclopentadiene), halogenated poly(isobutylene-*co*-cyclopentadiene) and mixtures thereof.